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INTERNATIONAL HEALTH EXHIBITION

LECTURES.

PHYSICAL EDUCATION OF GIRLS.

*A Lecture delivered in the Lecture Room of the
Exhibition, July 25th, 1884.*

BY MISS CHREIMAN.

PRINTED AND PUBLISHED FOR THE
Executive Council of the International Health Exhibition,
and for the Council of the Society of Arts,

BY

WILLIAM CLOWES & SONS, LIMITED,
INTERNATIONAL HEALTH EXHIBITION,
AND 13, CHARING CROSS, S.W.

1884.

PRICE SIXPENCE.

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International Health Exhibition,

LONDON, 1884.

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JULY 25TH, 1884.

A LECTURE ON THE PHYSICAL EDUCATION OF GIRLS.

By MISS CHREIMAN.

HIS GRACE THE DUKE OF BUCKINGHAM AND
CHANDOS, K.C.S.I., in the Chair.

MY LORD DUKE, LADIES AND GENTLEMEN—I have been requested by the Executive of the Literary Department of the Health Exhibition, to speak to you on the subject of gymnastic and other matters of physical training for girls and women ; and I have been further asked to confine my remarks principally to the present need and late progress of physical education, and to give some particulars of the kind of exercise my experience has led me to adopt.

Firstly then—for I propose to keep as nearly as possible to the lines laid down for me—

THE PRESENT NECESSITY FOR THE SCIENTIFIC PHYSICAL TRAINING OF GIRLS.

You will all agree with me, I think, that this our age has special need of wise, and noble, and healthy women ; that the present conditions of female life—its widening responsibility and intense competition, the lengthened curriculum of “higher” education, errors of fashion, all the difficulties of want of space and want of time—present special hindrances to the attainment of that bodily perfectibility upon which the moral, intellectual and physical strength and beauty of womanhood so largely depends ;

and that the cumulative privileges and tyrannies of civilisation need some opposing force to stay the constitutional undermining and physical degeneracy which are in acknowledged progress.

In order that we may look at facts as they are, will you call to mind, for a moment, twenty of the "finest" women of your acquaintance? In how many cases do their daughters give promise of becoming as tall, as broad chested, as erect, as free from nervous irritability as their mothers? Very few, if your experience coincides with mine.

It has been said that perfection of form, grace of movement, and according to age, full respiration, are natural to infancy, and watching the gambols of our very little ones we can well believe it; but with our artificial environments, most certain it is, that fatal failings are often inherited, or induced at a very early age, and progressively developed. Can our elder girls breathe properly? I know that members of the profession of medicine, and teachers (on scientific principles) of singing and elocution, will say they cannot. Respiration is an involuntary and normal act, yet our doctors say that long continued bad health, and ultimate death are the frequent results of continuously impeded expansion of the lungs; our teachers say, that many of the faults attributed by singer or speaker to weakness of the voice are caused by a bad method of breathing, and the absence of that masterful control over the respiratory apparatus, without which it is impossible for any one to speak or sing with perfect self-possession and accurate response of will, whilst by those whose business it is to train to severe exercise, we are told that the distress experienced is oftener due to embarrassment of the lungs than to muscular fatigue; and we all know that a beautiful voice has long been considered a special, instead of a common, gift, and that individually and nationally we have, in great part, lost, as our solace and rest amid the trials and labours of life, the stimulus of eloquence, and the tranquilising, energysing, elevating and recreative influence of song.

Walking ought—after the period of infancy—to be as

easy and natural as breathing, but I am quite sure no one will assert that our girls walk well. We must have noticed the poke of the head, the contraction of the shoulders, the slackness of knee, the stiffness of the back, the jumpy, hip wobbling, mincing gait, and general absence in one way or other, of that firm, easy and graceful carriage which is not only dignified and pleasing, but which contributes so eminently to the facility and agreeableness of the act of walking, both for work and recreation.

Then, sitting is worse than walking. Mothers constantly tell me that they find it impossible to induce their daughters to "sit up." It has been asserted that the maintenance during long hours of the erect position, to which their grandmothers and mothers were compelled, has tended to the weakening in their offspring of the over-taxed muscles of the spine ; but this assertion does not appear to be substantiated by observation ; certainly the inadaptability of children's seats to all purpose of rest, tight stays, high heels, heavy clothing, insufficient exercise, and bad positions in the various occupations of life (as sleeping, writing, reading, drawing, practising on the violin, piano-forte, harp, etc.), have much to do with the difficulty, and its evil evidence in increasing weakness, disordered functions, want of spirits, and commencing deformity, is very painful to those who can read it.

Together with this threatening degeneracy of female physique, have come increasing educational and social demands for constitutional robustness, and a progressive sense of the advantage of that physical vigour without which the duties of womanhood cannot be efficiently performed. Amongst the many wiser female guides and guardians of our girls, it is to be feared that there are still not a few with whom the old fallacies that the body should be sacrificed to the mind, and that a hearty enjoyment of such games as ensure activity and increase appetite, is unladylike, still linger ; and some good parents "of the old school" still teach their daughters to regard their bodies very much as a lobster may be supposed to regard its shell.

Our girls have ceased, or are fast ceasing, to cultivate delicacy in order to render themselves attractive, and happily almost all men of education have ceased to consider pallor interesting, and to admire a tiny distorted foot and a pinched waist—for knowledge has dispelled mystery in the matter—and understanding the laws upon which the healthy action of the animal economy depend, they know that the girl whose face is adorned with nature's choicest colours, possesses in fuller measure than her pallid sister, and will longer keep, the cheeriness and energy and beauty of youth; they know something of the value of good circulation, respiration, and digestion, and the good spirits that accompany them, as elements of domestic happiness; and they know, too, that the paralysing process of compression must ere long result in making duty toilsome, sleep unsound, temper uncertain, dyspepsia certain, and beauty a dream of the past. Whilst in both sexes there is an improved though still defective capacity for apprehending their obligations to society in this matter of health, and for recognition not only of the immediate and sensibly felt results of the observance or disregard of hygienic conditions, but also of the fact that future personal enfeeblement and hereditary disease, or augmented vitality and entailed health, are the certain, intensified *remote* results of those feebly felt, but daily operating influences, whose potency is only in their permanence.

Chief amongst life's debilitating influences is inaction, and one of the chief means of preserving health, increasing strength, improving the mental faculties, and aiding the arrest of deformity and the cure of disease, is the one with the necessity of which we are to-day concerned, viz., muscular exertion.

The body is strangely tolerant of inaction, considering that its every part is weakened by it. Inaction impedes the circulation, impoverishes tissue, diminishes vital heat, checks the action of the skin, impairs digestion, and disorders the nervous system; it were almost to be wished that it possessed, like hunger and thirst, and cold and

weariness, some power of protest, by immediate importunate sensation, and, like them, were capable of enforcing attention to the body's need, and of so securing, by the vigorous action of every part of the system, the circulation of enriched and aërated blood, prepared from regular supplies of fresh food, imperative demand for which would only be the more surely made.

The muscles, then, are the grand instruments by which man acts on the external world. Life itself is sustained by the constant exercise of muscular power; and were either the heart or the muscles of respiration to forget their part for a few minutes, existence would be at an end. Without the aid of muscular power, man's grandest conceptions and most energetic resolutions would remain unfulfilled; Shakespeare and Milton would have been mute as the statues which now represent their forms, and the immortal creations of their genius would have been lost to the world for ever. To replenish the blood exhausted of its nutritive principle by exercise, a greater quantity of food is required, and to prompt us to attend to this condition, the appetite becomes keener and more imperative, and the power of digestion proportionally vigorous. The food taken is more speedily digested, and its absorption from the surface of the intestines and transmission into the circulatory current are more rapid. That the blood so improved may be properly and quickly animalised in the lungs, respiration becomes deeper and frequent, thus admitting a larger quantity of air and freer circulation through them than before; and the blood in this way renewed, and re-endowed with the pabulum of life, imparts fresh nutriment and vigour to all the organs of the body, and fits them for that active exertion which the proper discharge of his duties imperatively requires from every member of the human race.

Someone has said that if only a few of the advantages which result from exercise were to be procured by any one medicine, nothing in the world would be more anxiously sought after.

Dr. Graham transcribes the following story: "Ogul, a voluptuary, who could be managed with difficulty by his physician, on finding himself extremely ill from indolence and intemperance, requested advice. 'Eat a Basilisk stewed in rose water,' replied the physician. In vain did the slaves search for a Basilisk, until they met with Zadig, who, approaching Ogul, exclaimed, 'Behold that which thou desirest; but, my lord,' continued he, 'it is not to be eaten; all its virtues must enter through thy pores. I have, therefore, enclosed it in a little ball, blown up, and covered with a fine skin; thou must strike this ball with all thy might, and I must strike it back again for a considerable time, and by observing this regimen, and taking no other drink than rose-water for a few days, thou wilt see and acknowledge the effect of my art.' The first day Ogul was out of breath, and thought he should have died from fatigue; the second he was less fatigued, and slept better; in the eight days he recovered all his strength. Zadig then said to him, 'There is no such thing in nature as a Basilisk, but thou has taken exercise, and been temperate, and hast therefore recovered thy health.'"

Attention cannot be too early paid to the training of the body, its systematic and progressive culture should progress jointly with that of the mind, and the exercise of playground, garden and gymnasium become a part of educational routine.

The Kindergarten system of teaching has fully recognised the wisdom of giving play, exercise, conversation, singing, and instructive manual occupations a large part of the time usually devoted to books, and it is most profitably spent both as regards the minds and bodies of our little ones.

Girls should play oftener, and to a later age, than is customary with the majority of them. Moderately exciting social games, and the shouting and laughter which accompany them, furnish varied and vigorous muscular action, and pleasurable mental and nervous stimulus, which

are invaluable. Tennis, cricket, croquet, skipping, swinging (the swing being kept in motion by self-exertion, not the passive movement). But good and necessary as such games are, they give the left side of the body too little work, and do not sufficiently tend to the development of the thorax, to take the place of scientific exercise at any time during the period of growth.

In addition to games, archery, the lighter work of gardening, and some amount of domestic work, are good.

The exercise of rowing assists largely in imparting a graceful carriage and free play of the muscles of the back. It should not be engaged in at too early an age, on account of the strain thrown upon the joints.

I have been told that, in addition to its general tonic effect, horse exercise is of special value in several chronic diseases, resulting from the impaired action of the viscera of the abdomen, and is preventive in incipient disease of the chest. Growing girls should be provided with saddles with reversible pummels, so that they may be seated alternately on the off and near side of the horse.

Both as an exercise and a safeguard the art of swimming should be thoroughly acquired, but it would be well if some means were taken to prevent girls remaining for too long a time in and about the swimming bath. I fear that irreparable damage is then done to the constitutions of delicate girls, who "begin to decline without any apparent reason ;" and that it is a matter in which consequence fails to get connected with causation, unless the damage be of so immediately serious a nature as to bring the sufferer under medical care. Girls shiver and have headache, look pale and feel languid, lose appetite or digestive power, but no lesson is learned by such gentle remonstrance ; there is an opinion amongst them that, "if I am up to my chest in water I cannot take cold," and "taking cold"—the kind of cold that makes itself evident in cough, and throat and nasal discomfiture, seems to be the only evil recognisable by them as connected with this form of excess. One minute's conversation with any physician would convince

parents of the extreme danger of this. In one bath of which I know, gentlemen are limited to twenty minutes—ladies “may stay in as long as they like.”

When learning to skate, it is desirable to acquire the habit of bringing the weight of the body somewhat forwards—the weight lies upon the heel more than the fore part of the feet, and one advantage of this is that falls are likely to be forwards, and their force can be broken by the hands.

It is to be regretted that dancing, in large well-ventilated rooms, or in the open air, during the hours of the day, and costumes adapted to exercise, is not more frequently engaged in.

With regard to

THE KIND OF EXERCISE MY EXPERIENCE HAS LED ME TO ADOPT.

I must premise that my pupils are all of the upper or middle class, requiring and desiring, as the result of their training, not huge biceps and great lifting and climbing powers, but harmonious muscular and functional vigour, ease and accuracy of muscular action, symmetry of form, the grace that results from well-managed strength, and an increased fitness for the enjoyment of every pleasure, and the discharge of every duty of life; and that I am increasingly of Dr. Combe's opinion that, “If we examine the attitudes and motions of the body which occur in the better class of gymnastic exercises, and in fencing, dancing and swimming, we shall find that they are no less graceful and beneficial to the young who engage in them, than pleasing to those by whom they are witnessed—just because they are in harmony with nature, or, in other words, with the structure and mode of action of the joints, ligaments and muscles by which they are executed. But it is far otherwise with some of the anomalous exercises which were at one time so fashionable, and which are not yet extinct in schools and gymnasia, and seem to have for their object the conversion of future men and women into foresters, firemen, or savages, rather

than into beings who are to continue to have the use of stairs, ladders, carriages, steamboats, and the other conveniences of civilised life. It is, no doubt, a good thing for a boy to be able to climb a perpendicular pole or a slippery rope, when no other means present themselves of attaining an important object at its upper end ; it is an equally good thing for a young lady to sustain her own weight hanging by one or both hands, when there is no possibility of resting her feet on *terra firma* ; and where boys and girls are strong enough to take pleasure in such amusements, there is no great reason to hinder them, provided they are impelled to them, not by emulation or any secondary motive which may lead to over exertion, but by the pure love of the exercise itself. But the case is altered when such extraordinary evolutions are not only encouraged but taught to all indiscriminately, whether they be strong or weak, resolute or timid. We have only to reflect for a moment on the structure of the shoulder joint, and on the sphere of action of the muscles surrounding it, to perceive that the position of the one and the strain upon the other caused by such exercises, are so forced and unnatural as to exclude the notion that the Creator can have intended either to be practised, except upon occasions of urgent necessity. The very violence of the effort required to sustain the body when hanging by the hands, is far beyond that moderate exertion which adds to nutrition and strength ; in delicate subjects it may even induce relaxation and stretching of the ligaments and blood vessels, and thus lay the foundation of future and fatal disease. But in all violent evolutions we need only look at the dragging and distortion which they produce, and which form such a painful contrast to the ease and grace of all natural motions and attitudes, to perceive that they are *out of the mode of nature*, and that neither health or elegance can result from them."

When some few years ago my attention was forcibly called to the need of improved physical training for girls, I visited the different gymnasia of England, and found in

the one at Liverpool much that I required. This fine gymnasium is now the property of the Young Men's Christian Association. It was then under the management of a council, Mr. Henry Coulson being the lessee and master. I worked (privately) for its diploma, and was, when the gymnasium closed, the only lady holding one.

This diploma represents able and careful instruction, and (as I was desirous to be able to make a wise selection of exercises from knowledge as wide and inclusive as possible) a good deal of theoretical and practical study—but is of no higher value. I hope that for the teachers now being trained for this branch of Physical Education, we may succeed in getting examinations by the University of London. Surely the nation's health is of sufficient importance to warrant such protection of Physical Education.

Well, I learned how to exercise the head and trunk, and arms and legs; but when I commenced to teach, I found that the fingers and feet, and the larynx and lungs, ought to have their special exercise too; and, that, as I necessarily rejected many of the exercises of the gymnasium, and my bright English pupils require variety, and, as they progress, some sense of difficulty, I had very much to add; and the system, partly original, partly eclectic, which has resulted, has been practically illustrated in the gymnasium of this Exhibition by a class of pupils under Miss James, and at my demonstrations in this (Albert) Hall, held by desire of the Ladies' Sanitary Association, and the Executive of the Health Exhibition. I hope and believe that these free open practices, which my pupils have very kindly enabled me to hold from the commencement of my work, have been of service to the cause of physical education.

One of my aims, and that of the ladies who so efficiently assist me, is to make every lesson thoroughly enjoyable, as we believe the recreative benefit of movement to be largely in proportion to its enjoyment.

Another is to get, during every hour's practice, the maximum of muscular exertion compatible with the

strength and capability of the class, without incurring any possibility of strain or undue fatigue.

The ultimate object of the exercise (as already mentioned) being ever in mind.

Private lessons have sometimes to be given to delicate pupils, as exercise must be adapted to their condition from day to day, but the usual instruction is to classes meeting in large, lofty, well-ventilated halls, which can be kept cool in summer and warm in winter. A low temperature, as sometimes recommended, is not well, as moderate warmth is favourable to muscular development.

The gymnastic costume worn by my pupils is a short princesse robe of navy blue satara cloth, with knickerbockers of the same. (Satara cloth is a soft, light, durable woollen material.) A broad sash of "cardinal" cashmere is also worn, this being made use of as a support during certain exercises, and as a throat and chest wrap in passing to the dressing-rooms after exercise. Now that jerseys are so neatly made, they are sometimes substituted for the upper part of robe, a skirt attached to a bodice of thin woollen material being worn beneath them. Stays, unless of such hygienic make as to allow of perfectly free movement and full respiration, are forbidden, as are also "heels."

We usually "open work" with a vocal march, or gymnastic song. It is not altogether easy to find songs which are adapted to movement and suitable for elder girls. I have found it necessary to write most of those we use; perhaps as we progress this difficulty will be removed. Some of my own series of movements are "free"—as the finger and wrist, feet and other series—and we make use of German, Spanish, and Swedish "free" exercises, gymnastic dances, games, &c.

We also use *light* dumb-bells, bar-bells, poles, clubs, rings, skipping-ropes, balls, &c., for series of movements. There are various obvious advantages in the use of light and portable apparatus. Somewhat similar light apparatus has been largely adopted in the gymnasia for ladies in America, with (I am told) very excellent results, the

exercise being visibly beneficial, greatly enjoyed, and increasingly popular. This is satisfactory, as the need of our transatlantic cousins is even greater than our own.

Certain series of dumb-bell and bar-bell movements are commenced at an early period of the training of most pupils ; they are extremely useful in all stages of development, the muscles of the back, shoulders and chest being well exercised by them.

Club exercises we never give, until pupils have acquired considerable muscular control, and are supposed to have realised experimentally the physiological advantages of good position. They are then of considerable value, and their progressive difficulty, together with the beauty of the circular movements executed with them, make them a favourite series.

Movements of resistance are executed by the opposed action of two pupils of fairly equal strength, with, or without, wooden rings, &c. The effort of resistance on the one part, and that of overcoming resistance on the other, increase the physiological effects of the exercises.

My ball exercises, of which there are several series, some of them of considerable difficulty, were arranged chiefly for home practice. They are useful in providing varied and graceful exercise, and for unconscious cultivation of accuracy and precision of movement, sense of "time," and regulation of force expenditure to the desired result, and I am told that they have a beneficial influence upon the nerves of vision. The apparatus for these is an india-rubber air ball about three inches in diameter.

Sometime ago Mr. Charles Roberts, F.R.C.S., called my attention to the fact that many growing girls become flat-footed, and suggested the addition of special series of exercises which should, by strengthening the muscles, joints, and ligaments concerned in the important functions of support and progression, lessen the tendency to this deformed condition of the feet. We will show you some of the exercises that I have since tested, and found to meet the requirement ; and I may add that the steps of the

sailor's hornpipe and the Scotch dances are most excellent for strengthening the feet and lower limbs—I am now making them part of our course. We should bear in mind that by loss of the arch, the beauty, elasticity, strength and usefulness of the feet are seriously diminished.

I have lately added to our respiratory and laryngial gymnastics. Some of the new exercises have been selected from those used in German schools of elocution for the relief of asthma, stammering, &c., and I have reason to hope that increased healthfulness will result wherever such exercises are regularly and carefully practised.

We are told that strength and beauty of voice was an outcome of the physical training of the Greek School. May it not be an aim of our modern training? Voice cultivation for public reading, speech and song, must, of course, be in the hands of the professor of singing and elocution; but it is lamentable that their work should be hampered and hindered, as it is, by a previous disregard of all acoustic and physiological principles, so that the pupil goes to the professor with induced weakness, bad habits of breathing, and faulty or indolent action of the muscles and apparatus by which articulate sounds are produced. Surely this ought to be prevented. Respiration is a function essential not only to good voice but to good life; power of movement, capacity of endurance, and all else of physical well being depend upon it, and whenever it is imperfect it cannot have too careful attention from parents or teachers. We are told that “the neglect of muscular activity displayed by the majority of singers and speakers, and the laziness with which they open their mouth and use their lips and tongue, is a frequent cause of stammering and other voice failure;” and that “a man of good physical capacity may be trained so that the voluntary muscles of the arms and chest are powerfully developed, with a contractile force proportionate to their size, and yet his respiratory power may be so disproportionate that he can not run a hundred yards without gasping;” and again, “that the habitual faulty use of the respiratory and vocal

muscles produces congestion of the vascular supply to the mucous membrane, disorder of the secreting follicles, irritation of the sensory nerves of the throat, and uncertainty of action of the vocal muscles, each resulting in hoarseness and deterioration of power both to produce and to control the desired tones ; so that all functional exercise occasions fatigue and nervous depression, with the addition of injury to the general health. Chronic throat disorder is thus established, which if neglected is obstinate of cure.*

The muscular apparatus concerned in the requisite movement of the jaw, tongue and lips, might be strengthened and rendered controllable by adapted exercise ; and lung gymnastics, regularly practised, would give the needed power of methodic prolonged inspiration and expiration.

The lower ribs, which have about ten times the mobility of the upper ones, are generally tightly dress-bound with women, the great majority of whom never thoroughly inflate their lungs ; and the congestion of the unused air cells, and consequent imperfect oxygenation of the blood, goes far to produce dyspepsia, nervous disorder, consumption, and kindred evils.

In our first exercises the power of advancing and retracting the abdomen during inspiration and expiration, whilst the ribs are as nearly as possible stationary, is practised.

This is followed by various abdominal and costal breathing exercises, respiration being generally through the nostrils, but occasionally, for special physiological reasons, through the open mouth. Rarely, and only in combination with the costal and abdominal, clavicular inspiration is practised, in order to extend the expansion of the chest to its fullest limit.

These exercises are alternated, or accompanied with arm movements, &c.

Ordinary expiration and inspiration occupy less than

* MacLaren, 'Physical Training.'

† Lennox Browne and Emil Behnke, 'Voice, Song, and Speech.'

two seconds. After some practice each process may (during exercise) occupy from twelve to twenty seconds—and such full respiration greatly strengthens the intercostal muscles, diaphragm, &c., and increases the size and elasticity of the lungs.

The respiratory movements of the larynx, by which the size of the glottis is alternately increased and diminished, are improved or impeded similarly to those of the thorax.

In these exercises the “rhythm of the vital vibrations” must be preserved ; whenever we prolong “the period of tension” at the expense of “the period of relaxation” fatigue occurs and danger begins. All respiratory exercises must be gently commenced, and very gradually increased, in order that reciprocal action between the heart and lungs may be established.

The function of the hand is so distinctive and important that it is strange that its training was so long overlooked, and is receiving but little attention even now that much has been spoken and written of the lack of exercise for the fingers in the ordinary occupations of life—and their consequent weakness and painful fatigue in the special occupations of which they are the agents ; and it is known that the progress of pianoforte-, violin-players and other artists would be greatly facilitated, and the tendency to stiffness of the joints, cramp, paralysis, and other complaints of draughtsmen, writers, carvers, painters, watch-makers, type-setters, stenographers, needlewomen, and all other workers who maintain themselves by the continuous use of certain sets of muscles, would be greatly lessened, if not prevented, if all the muscles of the hand were gymnastically exercised with sufficient regularity to make and keep that useful member strong and flexible.

No apparatus is necessary ; elasticity, freedom, and force may be given to the muscles, joints, ligaments and tendons, of wrist, palm, and digits, by the habitual practise of very simple antero-posterior, transverse, and circular movements of the wrist, and by flexor, extensor, and rotatory movements of the fingers.

The exercise of beginners should be conducted with the greatest method and care ; the general capacity of the pupil should be ascertained, and any local weakness well considered.

After twelve years of age, jumping and leaping exercise should, I think, be very sparingly indulged in by girls.

Excess is to be as carefully guarded against as insufficiency ; strain, inflammation, irregular action and paralyzing exhaustion of muscle, brain, and nerve, and of all the organs dependent upon their healthy action, are the damaging consequences of frequent (sometimes of a single day's) excess.

In series of movements the left side of the body should have precisely the same amount and variety of exercise as the right side. Head and trunk movements should, as a rule, be slowly executed.

Exercises which operate directly upon the internal organs, deep breathing, running, laughing, singing, reading aloud, &c., and such arm movements as increase respiration, are generally beneficial to weak-chested girls ; but existence of any weakness of the heart should be ascertained, and only adapted exercise given to pupils so suffering.

Girls should on no account attend classes in the hope of cure of spinal weakness, *slight or otherwise, without having first taken medical advice.* Some class exercises are not adapted even to the kind of curvature for which exercise is so beneficial.

Pupils, as well as teachers, should be informed that the time for the "hardest" exercise is neither at the beginning or end, but towards the middle of the practice ; that exercise should increase the action of the skin, and any check to perspiration after practice must be carefully guarded against ; that good appetite should result from exercise, but substantial meals must not be taken either immediately before or after it, and that failure of appetite and languor are symptoms of excess.

The necessity for exercise continues through life, and

should be regular and active up to a much later age than is commonly the case. Our physicians say that at no period of life is systematic exercise more imperative than between forty and fifty, as at that time the wear and tear of life is lowering the vital power, circulation is slower and feebler, and if exercise be neglected, local congestions and functional derangements result, of which some of the earlier symptoms are flatulence and constipation, insomnia, vertigo, and premature old age ; or perhaps hysteria and causeless depression, the commencement not unfrequently of insanity or intemperance.

I believe that for most girls, one or two hours per week of well directed scientific exercise are sufficient, *if commenced at an early age and regularly continued* ; and if outdoor exercises and games are also engaged in. When muscles are exercised to their fullest capacity, the physiological effects of such exercise are sufficiently permanent to be carried on, as it were, by its recurrence at regular intervals, which must not be too distant, but certainly need not be daily.

I have been asked to say a word in defence of musical accompaniments ; and, although it seems to me that music might very well be left to speak for itself, I gladly say that we find it not only an inspiring accompaniment, but a powerful incentive to exercise. Suitable music allies itself, as it were, with movement, is of itself mentally recreative, and supplies that pleasurable excitement which, if not an essential condition of healthy exercise, is a nerve and muscle stimulus, which adds fourfold to the energy and enjoyment of every pupil, and acts as an inspiration to the indolent and feeble, to whom movement is not, of itself, pleasurable. Those of you who have danced without music, will understand this. Even the sailors' "Yo-heave-ho," &c., is of evident value in adding grace and harmony to their work.

My hope is that before the lapse of many years we may have gymnastic halls for girls in every district of every town, under the management of women of education and

refinement, fitly trained (not hastily and partially taught to teach "a system" of exercises)—trained for the work of physical education, and, in co-operation with visiting teachers and medical examiners, able to assist mothers in all matters of physical well-being. In these Halls the apparatus may be of the simplest; but do let us have plenty of space, plenty of air, and for decoration, forms of beauty in sculpture and painting.

The health of our women is of the highest domestic, social, and national importance: and, happily, no longer content with ignorant, selfish participation in life's mighty marring, trusting to "a Providence that shapes our ends, rough-hew them as we will," our women in tens and hundreds are stepping up on to an intellectual platform high enough to overlook their responsibilities, and, if too late for themselves, to desire for their children the "excellence of perfect adaptation and thorough efficiency in all the relationships of life." When the majority of our mothers and daughters have a higher ideal of life and a truer and more definite standard of domestic and social morality, physical progress will be assured.

I sometimes wish that, as scholastic "marks" have such a mighty influence on scholastic effort, a mark value could be given to symmetrical growth. In all cases in which bad positions during home and school life are habitual, and head and neck are poked forwards, or the spinal column bent to front or side, the muscles that are subjected to the undue tension are strained beyond their power of contractility, maintenance of an erect position by and by becomes impossible, even by effort, and more or less of deformity must result. If bad position were merely unsightly I would not recur to this matter, but it is so little regarded by many of our girls, and so important, that I am impelled to do so. Good position during sleeping and waking hours is exceedingly favourable to health, and in proportion to habitual departure from it are the functions of the thoracic and abdominal viscera impeded, and circulation of the blood, respiration, tone of voice, normal

sightedness, and even, to some extent, power of attention and use of the limbs impaired.

As regards impairment of vision alone, this matter imperatively demands attention, both as a cause and an effect. Some oculists so fully recognise this that they prescribe chin supports for their patients.

An idea is prevalent that the condition of shortsightedness is compensated for by increased durability of sight. It seems to me desirable to have decisive medical testimony on this matter. I see the disadvantage of reduction of focal length every day of my life, and can but think that if it ever have any advantage over normal vision in the matter of duration, it must be by its better conservation, and not by loss of normal power ; and I strongly advise girls to lift up their books, &c., towards their eyes, and not bring their heads down to (almost upon) their books, and to gradually increase the distance between the two, as in some cases of induced myopia more or less of normal power may be slowly regained.

If we could make a dropped shoulder as costly in marks as a dropped "h," and get all lack of functional ability or symmetrical growth regarded as disabilities which culture should remove ; and if progressive development until the narrow-chested girl breathe her proper volume of air ; the weak tissues acquire substance and contractile power ; stiff or protuberant joints receive correction, and want of local power give place to harmonious strength ; if, too, preservation of sight and improvement of other special senses could be provided for by methodical instruction, tested by periodical examination, and acknowledged in reports and diplomas ; physical failure would cease to be the shameful accompaniment of intellectual success : and in possession of "knowledge not purchased by the loss of power," our girls might perhaps come to believe, with Charles Dickens, that "the power of knowledge is to bear and forbear, to learn the path of duty, and to tread it, to engender that self-respect which does

not stop at self, but cherishes the best respect for the best objects ; to turn an always enlarging acquaintance with the joys and sorrows, capabilities and imperfections of our race, to daily account in mildness of life and gentleness of construction, and humble efforts for the improvement, stone by stone, of the whole social fabric."

But for this we must wait until the British public, having learned how much better and easier is prevention than cure, and how costly, individually, and nationally, are feebleness and failure, parents and teachers combine in desire to make mental and physical vigour the result of educational training.

I know that some of you, looking at your bright young daughters, will feel that notwithstanding all that can be said of the excellence of Grecian, and the comparative neglect of modern physical training, no girl of other time or state, "could hold her own for a moment against the beauty of a simple English girl of pure race and kind heart;" and I fully agree with them : but the more is the pity that our British capacity for well-being is not better recognised. The popular English theory of health seems to me to resemble the popular English theory of ice. People say they are in perfect health, much as they say they are "as cold as ice." They have never considered that ice has as many temperatures as there are climates of the face of the earth, and, as Sir Francis Head told us, "if an Englishman succeeds in filling his ice-house, he feels satisfied that his ice is as good as any man's ice ; in short, that ice is ice, and there is no use in anybody attempting to deny it : but the truth is, that if two ice-houses were to be filled, one with Canada ice, the other with English ice, the difference between the quantity of cold stored up in each would be as appreciable as the difference between a cellar full of gold and a cellar full of copper ; in short, the intrinsic value of ice, like that of metals, depends upon the investigation of an assayer (extra cold being added to, and retained by the mass) ; and a cubic foot of lower Canada

ice is infinitely more valuable, that is contains infinitely more cold than a cubic foot of Upper Canada ice, which contains infinitely more cold than a cubic foot of English ice ; and thus, although each of these four cubic feet of ice has precisely the same shape, they each, as summer approaches, diminish in value, that is to say, they each gradually lose a portion of their cold, until long before the Lower Canada ice has melted, the English ice has been converted into lukewarm water." Health, at present, is as little a "fixed quantity," and power of resistance to adverse influences has but little more place in the popular theory concerning it.

In our opinion, health is not—whilst we have infancy and youth with a high rate of mortality, adult life without maturity, and early old age "sans teeth, sans eyes, sans taste, sans everything."

It is less of prodigal production, and yet "more life and fuller than we want" ; less, possibly, of physical and intellectual feeding, and more of the pleasurable digestion by which minds and bodies grow ; less of impulsive action under accidental or regular excitements, and more character building, by ennobling habits formed by the wholesome occupation of *all* our faculties.

I believe that our chief duty, for the honour of our God and the common weal of our country, is to teach our girls that if one thing is to be more plainly read in life's failures than another, it is that nature's laws are perfect and undeviating in their action, and the choice of good or evil the crowning dignity of manhood and of womanhood. We must teach them that human health is a matter of law, that the health and capability of parents greatly influence the health and capability of their offspring ; and give them such information of the wonderful mechanism of man, and the beautiful process of life, that they may know that it is a Christian woman's duty to be pleasing in person and courteous in manner—and realize how important to those who will be the mothers and teachers of the next generation, are perfection of structure and function, accuracy of

judgment, readiness of ear and eye and hand ; because it is in their beginnings, before these symptoms are perceptible to untrained guardians, that physical, mental and moral disease may be averted, and the progress of healthful life assured—because it is in the first struggles of scarce-conscious existence that holy aspirations may be strangled or strengthened, and genius supported by sympathy or dwarfed by indifference or misapprehension to fitful one-sided deformity.

Surely, when the majority of our mothers and daughters realise these things, there will be no more closing of the gateways of knowledge, “till in the void left by ignorance, prejudice has taken up its seat ;” but our girls will soon know more than we could tell them in many lectures, of the value of pure air, and large lungs to receive it, of the need of continued, adapted systematic exercise for the preservation of health of body and mind ; the danger, too, of its onesidedness and excess—of diet, with all the elements that the body requires for its nourishment—of clothing, that shall minister to their grace and comfort, instead of fettering them in crippling servitude to itself ; surely, too, they will soon have enough of hereditary and other disease, to make them desire consultation with their physicians about prevention as well as cure, and (if we could but make a sense of beauty and of proportion one of the outcomes of our training, they might learn enough of the marvellous possibilities of human development, and the range of objects eliciting their interest and offering to add to the measure of their enjoyment ; to delight in the certainty, that education is a matter, not of a few years, but of all time, and that,

they may feel “With faculties still growing,”

“That whatsoever point they gain, they yet
Have something to pursue.”

Speaking generally, men seem to me to have sounder ideas on these matters than women ; they certainly desire a long period of working capacity for themselves, and an

increasing number of them appear to agree with Shakespeare, that he amongst them who wins a helpmate fitted, and able to fit others, for long and happy life,

“Hath achieved a maid that paragon's perfection,”

* * * *

and

“Is as rich, in having such a jewel,
As twenty seas, though all their sands were pearl,
Their waters nectar, and their rocks pure gold.”

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